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Jurgen Morton-Finger

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EXAMINER

WOLLSCHLAGER, JEFFREY MICHAEL

ART UNIT

PAPER NUMBER

1791

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/764,145	Applicant(s) MORTON-FINGER, JURGEN	
	Examiner JEFFREY WOLLSCHLAGER	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 45-50,52,54-57 and 59-62 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 45-50,52,54-57 and 59-62 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Response to Amendment

Applicant's amendment to the claims filed June 18, 2009. Claims 1-44, 51, 53, and 58 have been canceled. Claim 62 is new. Claims 45-50, 52, 54-57 and 59-61 are currently amended. Claims 45-50, 52, 54-57 and 59-62 are under examination.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 45-50, 52, 54-57 and 59-62 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding claim 62, the claim recites "with no substantial pretreatment". There does not appear to be support for such a limitation in the original disclosure. While the examiner agrees that there is support in the original disclosure for a limitation directed to "no predrying" the examiner submits that the scope of "no substantial pretreatment" is different than the scope of "no predrying". Further, regarding claim 62 there does not appear to be support in the original disclosure to recite the cooling is "with a fluid". The examiner submits the recitation requiring that the cooling is "with a fluid" should be simply "h) cooling the strip of the polyethylene terephthalate;". Regarding claim 60, the claim recites that the strip is fixed after the first stretching step and before the second stretching step. There does not appear to be support for such a limitation in the original disclosure. The examiner

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notes that the “fixing” takes place in device (23) and that this is not between a first and second stretching step.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 45-50, 56, 57, and 59-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (US 6,409,949) in view of Bandera et al. (US 2002/0100995), Vogt et al. (US 6,589,463), Hills (US 4,849,113) and either of Bentivoglio (US 6,153,093) or Rosato (Extruding Plastics – A Practical Processing Handbook, 1998).

Regarding claim 62, 45-49, Tanaka et al. teach the basic claimed method of extruding reproduced/recycled PET flakes without precrystallization or predrying or any substantial pretreatment in a twin-extruder (col. 4, lines 32-35) and degassing the melt in the extruder (col. 4, lines 42-46; col. 6, lines 15, 27-31). Tanaka et al. teach feeding a chain-lengthening substance to the interior of the extruder downstream of the degassing location of the extruder

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(col. 6, lines 20-22; col. 4, lines 45-51) and spinning the melt coming out of the extruder through a die, not limited to pelletizing, to make a desired product (Table I; col. 4, lines 47-55; col. 6, lines 42-47). Tanaka et al. teach that the PET is supplied to the extruder with a metering screw (col. 4, lines 40-42) and teach feeding the melt to the downstream process with a gear pump (col. 4, lines 50-55). Tanaka et al. do not expressly teach what PET products can be made via extrusion through the extrusion die, the claimed filtering/control method, or the amount of screw filling in the extruder.

Bandera et al. teach in an analogous process a method of extruding waste/recycled polyethylene terephthalate (PET), such as PET granules from bottles (paragraph [0020]), without any precrystallization or predrying steps. In the method, Bandera et al. feed the still humid PET to a twin screw extruder such that the flights of the extruder screw are only partially filled and degas/vent the interior of the screw in order to remove moisture from the PET (Abstract; Figure 2; paragraphs [0010, 0019, 0020, 0025-0027, 0029-34, 0040] and claim 1). Bandera et al. teach that the degree of flight filling impacts the efficiency of venting while extruding PET (paragraph [0030]), as such; Bandera et al. establish the degree of flight filling as a result effective variable that would have been readily optimized. The examiner notes that in one interpretation, recycled/waste PET intrinsically contains some degree of contamination/dirt. Bandera et al. teach the screws are co-rotating in the same direction (paragraph [0026]).

Additionally, Vogt et al. (Figure 1 (29) (30) (31)) teach a process of producing an extruded film/web from PET via an extrusion and stretching process wherein the material is extruded through a filter (13) and cooled, and is then stretched longitudinally with rolls (23) and (25) a first time, followed by stretching longitudinally a second time with rolls (54) and (56), and is then annealed/fixed with roll (59) and cooled/quenched with roll (61).

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Furthermore, Bentivoglio (Abstract; col. 1, lines 10-16; col. 2, lines 8-67; col. 3, lines 56-64) and Rosato (pages 84-89) each teach extruding resins through a filter, backflushing the contaminants/dirt from the filter in response to differential pressure across the filter which increases the time between complete filter changes. Additionally, Hill discloses as conventional, adjusting extruder speed, as required, to account for the increased clogging of a filter downstream of the extruder (col. 13, line 63 – col. 14, lines 44).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Tanaka et al. and to have employed PET waste materials as suggested by Bandera et al. while controlling the amount of screw filling as suggested by Bandera et al., including to values within the claimed range, since Bandera et al. suggest the degree of screw filling impacts the efficiency of the venting in the extruder thereby establishing the degree of screw filling as a result effective variable that would have been readily optimized.

Further, it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Tanaka et al. and to have formed a PET film/web by longitudinally stretching the extruded film/web twice followed by fixing/annealing the film/web, as suggested by Vogt et al., since Vogt et al. suggest that one desirable product to be produced from PET is a film/web and that such films/webs are produced by a combination of stretching steps and annealing/fixed the stretched film/web.

Further, it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Tanaka et al. and to have employed a backflush filter, as suggested by either of Bentivoglio or Rosato, for the purpose of increasing production output and increasing the time between filter changes. Additionally, it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the

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claimed invention to have adjusted the extruder speed as the filter became plugged, as disclosed as conventional by Hills, for the purpose of maintaining a constant extruder output/output pressure.

As to claim 50, Tanaka et al. employ vacuum pumps (8) and (9) and Bandera et al. teach the venting is done with a hood under vacuum (paragraph [0027]).

As to claims 56 and 57, Hills discloses adjusting the extruder speed (col. 14, lines 1-20). Further, it is noted that the feed rate to the extruder would be adjusted/controlled to zero when the screens needed to be ultimately changed after many backflushes (Rosato, pages 84-89).

As to claims 59-61, Vogt et al. (Figure 1 (29) (30) (31)) teach a process of producing an extruded film/web from PET via an extrusion and stretching process wherein the material is extruded through a filter (13) and cooled, and is then stretched longitudinally with rolls (23) and (25) a first time, followed by stretching longitudinally a second time with rolls (54) and (56), and is then annealed/fixed with roll (59) and cooled/quenched with roll (61). The process involves preheating the web to 85 °C, before the first orientation and preheating the material to 100 °C before the second orientation (col. 5, line 36-col. 6, line 27), both temperatures are above the glass transition of PET. Additionally, Vogt et al. disclose a final stretching step immediately prior to wrapping the film (66) and quench the film/web (61) immediately after annealing/fixing (59). It would have been obvious to one having ordinary skill in the art to have modified the method of Tanaka et al. as suggested by Vogt et al., for the reasons previously set forth above.

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Claims 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (US 6,409,949) in view of Bandera et al. (US 2002/0100995), Vogt et al. (US 6,589,463), Hills (US 4,849,113) and either of Bentivoglio (US 6,153,093) or Rosato (Extruding Plastics – A Practical Processing Handbook, 1998), as applied to claims 45-50, 56, 57 and 59-62 above, and further in view of either of VanBuskirk et al. (US 5,281,676) or Pfaendner et al. (US 5,807,932)..

Regarding claim 52, the combination teaches feeding at least one chain-lengthening substance as set forth above, but do not explicitly teach the chain-lengthening substance is a lactam or oxazole derivative. However, VanBuskirk et al., teach processing PET with lactam derivatives as the chain-lengthening substances (col. 3, lines 24-31; col. 4, lines 31-52). And Pfaendner et al. disclose that oxazolines are known chain extenders suitable for increasing the molecular weight of recycled polyesters such as PET (col. 1, line 6-col. 2, line 38, in particular, col. 2, line 16; col. 6, lines 33-39).

Therefore it would have been prima facie obvious to one having ordinary skill at the time of the claimed invention to have employed the lactam derivative chain lengthening agent taught by VanBuskirk et al. in the method of Tanaka et al. because, as taught by VanBuskirk et al., lactam derivatives are well-suited for use as chain lengthening substances in PET applications and do not result in any undesired toxic byproducts such as phenol comprising compounds (col. 4, lines 46-52).

Additionally, it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to have employed an oxazoline based chain extender in the method of Tanaka et al., as suggested by Pfaendner et al., since Pfaendner et al. suggest such materials are art recognized equivalent alternative chain extenders suitable for utilization with PET.

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Claims 54 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (US 6,409,949) in view of Bandera et al. (US 2002/0100995), Vogt et al. (US 6,589,463), Hills (US 4,849,113) and either of Bentivoglio (US 6,153,093) or Rosato (Extruding Plastics – A Practical Processing Handbook, 1998), as applied to claims 45-50, 56, 57 and 59-62 above and further in view of Strobel et al. (US 6,585,920).

As to claims 54 and 55, the combination teaches the method as set forth above. However, Strobel discloses that cooling drums and water baths are art recognized equivalent alternative means for cooling extruded films (col. 6, lines 51-57).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have employed an art recognized equivalent method of cooling, such as a water bath, as suggested by Strobel in the combined method since it has been held that employing art recognized equivalents suitable for the same purpose is *prima facie* obvious.

Response to Arguments

Applicant's arguments filed June 18, 2009 have been fully considered, but they are not persuasive. Essentially, applicant argues that the rejection is a complicated and piecemeal rejection based on at least five references at any one time. The argument further implies that the rejection is based upon hindsight reasoning. This argument is not persuasive. The examiner notes and submits that the basic claimed method is disclosed in each of Tanaka et al. and Bandera et al. or in a straight forward combination of the two of these references. The examiner submits that one having ordinary skill would have understood that the reason neither Tanaka et al. nor Bandera et al. specifically discuss what PET product is made downstream from the extruder is that the suggestion from the references is that the methods are

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applicable to extruded PET products generally. The focus of their disclosures was not the downstream product but a method to afford the production of downstream products.

Accordingly, the examiner submits that the Vogt et al. reference is quite applicable to show an extruded PET product that is combinable with the methods of Tanaka et al. and Bandera et al.

Further, the examiner submits that the reason neither Tanaka et al. nor Bandera et al. provide detailed teachings regarding the filtering and pressure measurements and control in response to such pressure measurements is because such concepts and limitations are conventional and routine in the extrusion and polymer processing art. These limitations are provided from the other secondary references. As such, the examiner submits that in view of the presently presented claims the rejection is not based on hindsight or piecemeal reconstruction from references that don't clearly fit together, but is proper to render the claims *prima facie* obvious.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEFFREY WOLLSCHLAGER whose telephone number is (571)272-8937. The examiner can normally be reached on Monday - Thursday 6:45 - 4:15, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeff Wollschlager/
Examiner, Art Unit 1791

October 14, 2009